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TAIPEI, 100
TAIWAN

EXAMINER

PIZIALI, JEFFREY J

ART UNIT	PAPER NUMBER
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2629

NOTIFICATION DATE	DELIVERY MODE
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10/17/2007

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

USA@JCIPGROUP.COM.TW

Office Action Summary

Application No.

10/708,198

Applicant(s)

LIN, CHIAO-JU

Examiner

Jeff Piziali

Art Unit

2629

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 August 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 6-14 is/are pending in the application.
- 4a) Of the above claim(s) 8 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 6, 7 and 9-14 is/are rejected.
- 7) ☒ Claim(s) 6 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 August 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Election/Restrictions

2. Applicant's election with traverse of Species I (i.e., claims 1, 6, 7, and 9-14) in the reply filed on 8 February 2007 is acknowledged. The traversal is on the ground(s) that " 'appropriate explanation of separate classification, or separate status in the art, or a different field of search as defined in MPEP § 808.02' is not retold in the Office Action;" and "the two species are not independent and distinct because they do overlap in scope, mode of operation, function made effect for serving as switches" (see Pages 4-5 of the 'Response to Restriction Requirement' filed 8 February 2007).

Respectfully, this is not found persuasive because: Firstly, the demonstration or explanation of "separate classification, or separate status in the art, or a different field of search" required by MPEP § 808.02 is only applicable, "Where the inventions as claimed are shown to be independent or distinct under the criteria of MPEP § 806.05(c) - § 806.06." In contrast, the rules and procedures governing "claims directed to different embodiments or species" are located in MPEP § 806.04 and 808.01(a). There is no requirement (under MPEP § 803 or 35 U.S.C. 121 or elsewhere) to explain a "separate classification, or separate status in the art, or a different field of search" when restricting patentably distinct species.

Art Unit: 2629

Secondly, the two instant species are independent and distinct because the species do not overlap in scope, i.e., are mutually exclusive; the species are not obvious variants; and the species each have a materially different design, mode of operation, function, and effect. The applicant argues that because a P-type thin film transistor and an N-type thin film transistor both serve as "switches," this somehow means they are not mutually exclusive. The examiner respectfully disagrees, and notes that a P-type thin film transistor cannot possibly simultaneously also be an N-type thin film transistor -- therefore they constitute mutually exclusive switch types / species. Unless the applicant is willing to acknowledge on the official record that replacing the P-type thin film transistors of Species I with the N-type thin film transistors of Species II would have been obvious to one having ordinary skill in the art at the time of invention, then the requirement remains proper.

The requirement is still deemed proper and is therefore made FINAL.

3. Claim 8 is withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 8 February 2007.

4. This application contains claim 8 drawn to an invention nonelected with traverse in the reply filed on 8 February 2007. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Specification

5. The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Drawings

6. The drawings were received on 1 August 2007. These drawings are acceptable.

Claim Objections

7. Claim 6 is objected to because of the following informalities: "an first terminal" should be changed to "a first terminal." Appropriate correction is required.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 10 and 13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

10. The term "about a threshold voltage" in claims 10 and 13 is a relative term which renders each claim indefinite. The term "about a threshold voltage" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of

ordinary skill in the art would not be reasonably apprised of the scope of the invention. It would be unclear to one having ordinary skill in the art exactly what range the pre-charge voltage level can have before it would cease to be considered "about a threshold voltage."

Claim Rejections - 35 USC § 102

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

12. Claims 1 and 10-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Yumoto (WO/2001/006484 A). [Please note: For purposes of this office action, Yumoto (US 6,859,193 B1) is relied upon as the English language translation of Yumoto (WO/2001/006484 A).]

Regarding claim 1, Yumoto discloses a driving circuit of a current-driven active matrix organic light emitting diode (see Column 24, Line 60 - Column 25, Line 5), comprising: an AMOLED pixel [Fig. 24; OLED] connected to a current source [Fig. 24; data], the current source being used to charge/discharge a capacitor [Fig. 24; C, C_d] connected to a gate of a driving thin film transistor [Fig. 24; TFT2], and a gray scale of the AMOLED pixel is determined by a magnitude of a current provided by the current source; and a pre-charge switch [Fig. 24; PRC1] connected to the gate of the driving thin film transistor and a driving power source [Fig. 24; Vdd], for controlling the driving power source to pre-charge the capacitor before the current source charges/discharges the capacitor (see Column 23, Line 34 - Column 24, Line 7).

Regarding claim 10, Yumoto discloses a pre-charged voltage level across the capacitor is about a threshold voltage [Fig. 25; V_{th1}] of the thin film transistor (see Column 23, Line 40 - Column 24, Line 7).

Regarding claim 11, Yumoto discloses the driving power source comprises two different voltage levels [Fig. 24; positive potential and Fig. 26; negative potential] (see Column 23, Line 34 - Column 24, Line 37).

Regarding claim 12, Yumoto discloses method for driving a current-driven active matrix organic light emitting diode pixel (see Column 24, Line 60 - Column 25, Line 5), wherein an AMOLED pixel [Fig. 24; OLED] is connected to a current source [Fig. 24; data] and a driving power source [Fig. 24; Vdd] for charging/discharging a capacitor [Fig. 24; C, C_d] connected to a gate of a driving thin film transistor [Fig. 24; TFT2] of the AMOLED pixel, the method comprising the steps of: pre-charging the capacitor by using the driving power source; adjusting a gray-scale charging voltage of the capacitor by using the current source; and stopping charging/discharging the capacitor through the current source to control the AMOLED pixel to enter an illumination stage (see Column 23, Line 34 - Column 24, Line 7).

Regarding claim 13, Yumoto discloses a pre-charged voltage level across the capacitor about a threshold voltage [Fig. 25; V_{th1}] of the thin film transistor (see Column 23, Line 40 - Column 24, Line 7).

Regarding claim 14, Yumoto discloses the driving power source comprises two different voltage levels [Fig. 24; positive potential and Fig. 26; negative potential] (see Column 23, Line 34 - Column 24, Line 37).

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. Claims 6, 7, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yumoto (WO/2001/006484 A). [Please note: For purposes of this office action, Yumoto (US 6,859,193 B1) is relied upon as the English language translation of Yumoto (WO/2001/006484 A).]

Regarding claim 6, Yumoto discloses the driving thin film transistor is an N-type thin film transistor [Fig. 24; TFT2], and the AMOLED pixel further comprises: an organic light emitting diode [Fig. 24; OLED] having a first terminal and a second terminal, the second terminal being connected to a negative power source [Fig. 24; Vdd]; a first switch [Fig. 24; TFT2] with one end connected to the first terminal of the OLED; a second switch [Fig. 24; TFT1] with one end connected to the current source [Fig. 24; data] and another end connected to the drain of the driving thin film transistor (wherein both TFT1 and TFT2 and connected to ground); and a third switch [Fig. 24; TFT4] with one end connected to the drain of the driving

Art Unit: 2629

thin film transistor and another end connected to the gate of the driving thin film transistor and one end of the capacitor, and the other end of the capacitor being connected to a positive power source [Fig. 24; ground] (see Column 23, Line 34 - Column 24, Line 7).

In the embodiment illustrated in Figure 24, Yumoto does not expressly disclose using a P-type thin film transistor as the driving thin film transistor; nor a first switch with one end connected to the anode of the OLED and another end connected to a drain of the driving thin film transistor.

However, in other embodiments, Yumoto discloses the driving thin film transistor [Fig. 26; TFT2] is an P-type thin film transistor (see Column 24, Lines 8-34), and the AMOLED pixel further comprises: an organic light emitting diode [Fig. 26; OLED] having an first terminal and a second terminal, the second terminal being connected to a negative power source [Fig. 24; Vdd (Negative Potential)]; a first switch [Fig. 24; TFT2] with one end connected to the first terminal of the OLED; as well as using a double gate configuration [Fig. 8; TFT2a, TFT2b] for the driving thin film transistor (see Column 14, Lines 5-36).

Therefore, it would have been obvious to one having ordinary skill in the art to replace Yumoto's single N-type driving TFT with two P-type TFTs (i.e., the driving thin film transistor and the first switch), so as to improve the constant current property of the switch, while also suppressing leakage current.

Regarding claim 7, Yumoto discloses the third switch is a P-type thin film transistor [Fig. 24; TFT4]. However, in other embodiments, Yumoto discloses both the driving thin film transistor [Fig. 26; TFT2] and the second switch [Fig. 26; TFT1] being P-type thin film

Art Unit: 2629

transistors (see Column 24, Lines 8-34); as well as using a double gate configuration [Fig. 8; TFT2a, TFT2b] for the driving thin film transistor (see Column 14, Lines 5-36).

Regarding claim 9, Yumoto discloses the negative power source [Fig. 24; Vdd] is used as the driving power source [Fig. 24; Vdd] (see Column 23, Line 34 - Column 24, Line 7).

Response to Arguments

15. Applicant's arguments filed 1 August 2007 have been fully considered but they are not persuasive.

The applicant contends, "*Yumoto's PRC1 connecting to the data line and the capacitor Cd does not anticipate the pre-charge switch connecting to the gate of the driving thin film transistor*" (see Page 8 of the Amendment filed 1 August 2007). However, the examiner respectfully disagrees.

Yumoto discloses an AMOLED pixel [Fig. 24; OLED] connected to a current source [Fig. 24; data], the current source being used to charge/discharge a capacitor [Fig. 24; C, Cd] connected to a gate of a driving thin film transistor [Fig. 24; TFT2], and a gray scale of the AMOLED pixel is determined by a magnitude of a current provided by the current source; and a pre-charge switch [Fig. 24; PRC1] connected to the gate of the driving thin film transistor and a driving power source [Fig. 24; Vdd], for controlling the driving power source to pre-charge the capacitor before the current source charges/discharges the capacitor (see Column 23, Line 34 - Column 24, Line 7).

The applicant appears to be arguing here that Yumoto's pre-charge switch [Fig. 24; PRC1] is not "*directly connected*" to the gate of the driving thin film transistor [Fig. 24; TFT2] and the driving power source [Fig. 24; Vdd]. However, the applicant has not incorporated such "direct connection" subject matter and limitations into the claims at present. There are many different types of "connections" (including, but not limited to, indirect physical type connections and electrical type connections). In such a manner, the circuit elements illustrated in Yumoto's Figure 24 are all clearly connected to one another in one overall electrical circuit.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., direct connection between circuit elements) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

The applicant contends, "*the capacitor Cd connected to the PRC1 of Yumoto does not refer to the capacitor coupled by the second thin film transistor TFT2 as indicated in the present invention*" (see Page 8 of the Amendment filed 1 August 2007). However, the examiner respectfully disagrees.

Again, the applicant appears to be arguing here that Yumoto's capacitor [Fig. 24; C, Cd] is not "*directly connected*" to the gate of the driving thin film transistor [Fig. 24; TFT2]. However, the applicant has not incorporated such "direct connection" subject matter and limitations into the claims at present. There are many different types of "connections" (including, but not limited to, indirect physical type connections and electrical type connections). In such a

manner, the circuit elements illustrated in Yumoto's Figure 24 are all clearly connected to one another in one overall electrical circuit.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., direct connection between circuit elements) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

The applicant contends, *"in comparison with the present invention, the PRC1 of Yumoto pre-charges the capacitor Cd instead of the capacitor C coupled to the gate of the TFT2. Particularly, the PRC1 of Yumoto is adopted to pre-charge the capacitor Cd to a great voltage level (e.g. a threshold voltage of the TFT1 or a higher voltage level), such that less time spending on charging the capacitor Cd by the current of the data line resets in significant decrease in the charging time of the capacitor C when the scan line and the data line are driven. The data line is coupled to the gate of the TFT2 through a fetch use transistor TFT 3 and a switch use transistor TFT 4. Accordingly, as the scan Line is driven and the TFT 3 and the TFT 4 are turned on, the voltage on the data line is transmitted to the gate of the TFT2. As such, it is unlikely to pre-charge the capacitor C coupled to the gate of the TFT2, and only the capacitor Cd is able to be pre-charged as disclosed in Yumoto"* (see Page 9 of the Amendment filed 1 August 2007). However, the examiner respectfully disagrees.

Yumoto discloses an AMOLED pixel [Fig. 24; OLED] connected to a current source [Fig. 24; data], the current source being used to charge/discharge a capacitor [Fig. 24; C, Cd]

Art Unit: 2629

connected to a gate of a driving thin film transistor [Fig. 24; TFT2], and a pre-charge switch [Fig. 24; PRC1] connected to the gate of the driving thin film transistor and a driving power source [Fig. 24; Vdd], for controlling the driving power source to pre-charge the capacitor before the current source charges/discharges the capacitor (see Column 23, Line 34 - Column 24, Line 7).

Either or both of Yumoto's capacitors [Fig. 24; C, C_d], working either independently or in tandem, read on the instantly claimed invention. The applicant appears to be arguing here that Yumoto's capacitor [Fig. 24; C] is not "*directly pre-charged*" by the pre-charge switch [Fig. 24; PRC1]. However, the applicant has not incorporated such "direct pre-charging" subject matter and limitations into the claims at present. The present claims merely recite that the capacitor is pre-charged -- they do not explicitly specify which circuit element actually supplies/generates said pre-charge. Furthermore, the applicant does appear to acknowledge that capacitor [Fig. 24; C_d] is directly pre-charged by the pre-charge switch [Fig. 24; PRC1]. And this capacitor [Fig. 24; C_d], as explained above, is indeed at least electrically coupled to the gate of driving thin film transistor [Fig. 24; TFT2].

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., the pre-charge switch solely generating/supplying the pre-charge on the capacitor) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

The applicant contends, "*the capacitor C_d of Yumoto is not a physical capacitor but a parasitic capacitor on the data line*" (see Page 10 of the Amendment filed 1 August 2007).

However, the examiner respectfully disagrees.

Regardless of whether Yumoto's capacitors [Fig. 24; C, C_d] are "physical" or "parasitic," they do indeed exist and function as charge holding capacitors.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., a physical, non-parasitic capacitor) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

The applicant contends, "*the Examiner has contended that the OLED in FIG. 24 of Yumoto has an anode connected to a negative power source V_{dd} . In other words words, the Examiner construes that V_{dd} is a negative voltage and that ground is a positive voltage. However, said interpretation is deviated from general understanding in the related field. It is known to people skilled in the art that V_{dd} represents the positive voltage in most cases, whereas a common voltage level is referred to as ground or V_{ss}* " (see Page 10 of the Amendment filed 1 August 2007). However, the examiner respectfully disagrees.

The examiner first notes here that the applicant has removed the above argued anode/cathode subject matter limitations from the pending claim language, and dramatically altered the claimed circuitry arrangement in claim 6 via the Amendment filed 1 August 2007. As

Art Unit: 2629

such, the corresponding arguments are not longer commensurate in scope with the presently claimed subject matter.

However in response, the examiner does respectfully note that the applicant has provided no evidence to support the contention that Vdd is conventionally recognized as a positive voltage. Contrary to the applicant's contention, Yumoto expressly identifies Vdd as constituting a "negative potential" in Figure 26.

By such reasoning, rejection of the claims is deemed necessary, proper, and thereby maintained at this time.

Conclusion

16. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Art Unit: 2629

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeff Piziali whose telephone number is (571) 272-7678. The examiner can normally be reached on Monday - Friday (6:30AM - 3PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached on (571) 272-7681. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Jeff Piziali
12 October 2007



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